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**Amendment and Response**

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Serial No.: 10/734,682

Confirmation No.: 1223

Filed: 12 December 2003

For: SAMPLE MIXING ON A MICROFLUIDIC DEVICE**Amendments to the Claims**

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

**Listing of Claims**

1. (Previously Presented) Sample mixing structure on a sample processing device, the sample mixing structure comprising:
  - a process chamber comprising a delivery port on a proximal side of the process chamber and a valve on a distal side of the process chamber;
  - a mixing chamber comprising a mixing port, wherein the mixing port is located on the distal side of the process chamber;
  - wherein rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open, wherein the proximal side of the process chamber is located closer to the axis of rotation than the distal side of the process chamber;
  - and wherein, when the valve of the process chamber is open, rotation of the sample processing device about the axis of rotation moves the sample material out of the process chamber and the mixing chamber.
2. (Previously Presented) A device according to claim 1, wherein the valve of the process chamber is normally-closed.
3. (Original) A device according to claim 1, wherein a radial axis extends through the proximal side and the distal side of the process chamber.
4. (Previously Presented) A device according to claim 3, wherein the radial axis intersects the axis of rotation, and wherein the radial axis extends through the delivery port and the valve of the process chamber.

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5. (Original) A device according to claim 1, wherein at least a portion of the mixing chamber is located in a tangential direction off to a side of the process chamber relative to the radial axis.
6. (Original) A device according to claim 1, wherein the process chamber is located between a first major side and a second major side of the sample processing device, wherein at least a portion of the mixing chamber is located between the process chamber and the second major side of the sample processing device.
7. (Original) A device according to claim 6, wherein substantially all of the mixing chamber is located between the process chamber and the second major side of the sample processing device.
8. (Original) A device according to claim 1, wherein the mixing port comprises a valve, and wherein the valve of the mixing port is closed.
9. (Original) A device according to claim 1, further comprising a reagent in the mixing chamber.
10. (Previously Presented) Sample mixing structure on a sample processing device, the sample mixing structure comprising:
- a process chamber comprising a delivery port on a proximal side of the process chamber and a normally-closed valve on a distal side of the process chamber; and
  - a mixing chamber comprising a mixing port, wherein the mixing port is located on the distal side of the process chamber;

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wherein the process chamber is located between a first major side and a second major side of the sample processing device, wherein at least a portion of the mixing chamber is located between the process chamber and the second major side of the sample processing device;

wherein rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open, wherein the proximal side of the process chamber is located closer to the axis of rotation than the distal side of the process chamber;

and wherein, when the normally-closed valve of the process chamber is open, rotation of the sample processing device about the axis of rotation moves the sample material out of the process chamber and the mixing chamber.

11.-29. (Canceled)

30. (Previously Presented) A sample processing device comprising:

two or more sample mixing structures in a sample processing device, each of the two or more sample mixing structures comprising:

a process chamber comprising a delivery port on a proximal side of the process chamber and a valve on a distal side of the process chamber;

a mixing chamber comprising a mixing port, wherein the mixing port is located on the distal side of the process chamber;

wherein rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open, wherein the proximal side of the process chamber is located closer to the axis of rotation than the distal side of the process chamber;

and wherein, when the valve of the process chamber is open, rotation of the sample processing device about the axis of rotation moves the sample material out of the process chamber and the mixing chamber.

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31. (Previously Presented) A device according to claim 30, wherein the valve of the process chamber in at least one sample mixing structure of the two or more sample mixing structures is normally-closed.

32. (Previously Presented) A device according to claim 30, wherein a radial axis extends through the proximal side and the distal side of the process chamber in each sample mixing structure of the two or more sample mixing structures.

33. (Previously Presented) A device according to claim 32, wherein the radial axis intersects the axis of rotation in at least one sample mixing structure of the two or more sample mixing structures, and wherein the radial axis extends through the delivery port and the valve of the process chamber.

34. (Previously Presented) A device according to claim 30, wherein at least a portion of the mixing chamber in at least one sample mixing structure of the two or more sample mixing structures is located in a tangential direction off to a side of the process chamber relative to the radial axis.

35. (Previously Presented) A device according to claim 30, wherein the process chamber in at least one sample mixing structure of the two or more sample mixing structures is located between a first major side and a second major side of the sample processing device, wherein at least a portion of the mixing chamber is located between the process chamber and the second major side of the sample processing device.

36. (Previously Presented) A device according to claim 35, wherein substantially all of the mixing chamber in at least one sample mixing structure of the two or more sample mixing

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structures is located between the process chamber and the second major side of the sample processing device.

37. (Previously Presented) A device according to claim 30, wherein the mixing port in at least one sample mixing structure of the two or more sample mixing structures comprises a valve, and wherein the valve of the mixing port is closed.

38. (Previously Presented) A device according to claim 30, further comprising a reagent in the mixing chamber in at least one sample mixing structure of the two or more sample mixing structures.

39. (New) A device according to claim 1, wherein the valve is closed when rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open.

40. (New) A device according to claim 10, wherein the normally-closed valve is closed when rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open.

41. (New) A device according to claim 30, wherein the valve is closed when rotation of the sample processing device about an axis of rotation moves at least a portion of sample material in the process chamber into the mixing chamber through the mixing port when the mixing port is open.